

AMENDMENTS TO THE CLAIMS

Listing of claims:

This listing of claims replaces all prior versions and listings of claims in the application.

1. (Currently Amended): 1. A photocatalyst sheet comprising:

a substrate made of glass fiber;

a first fluorocarbon resin layer made of polytetrafluoroethylene (PTFE) coated on said substrate;

a second fluorocarbon resin layer made of copolymer of tetrafluoroethylene-hexafluoropropylene (FEP), or copolymer of tetrafluoroethylene-perfluoroalkylvinylether (PFA) coated on said first fluorocarbon resin layer; and

a third fluorocarbon resin layer consisting of copolymer of tetrafluoroethylene-hexafluoropropylene (FEP) containing photocatalysts at least of titanium oxide (TiO_2 [[,]] or TiO_3), coated on said second fluorocarbon resin layer;

of which said photocatalysts have the part exposed on said third fluorocarbon resin layer;

the ratio of said photocatalysts in said third fluorocarbon resin layer is 10 – 60 weight %; and

the surface of the fluorocarbon resin layer containing said photocatalysts of said photocatalyst sheet is water repellent upon ultraviolet light irradiation, and

when said photocatalyst sheets are thermally welded to each other, and if [[said]] a welded part is peeled off at the rate of 20 mm/min, then ~~whole of said fluorocarbon resin layer~~ the first fluorocarbon resin layer, the second fluorocarbon resin layer and the third fluorocarbon resin layer as a whole layer is completely peeled off from said substrate.

2. (Previously Presented): A photocatalyst sheet as set forth in claim 1, wherein the surface state of said substrate made of glass fiber is either smooth, rough, or mesh-like.

3. (Previously Presented): A photocatalyst sheet as set forth in claim 1, wherein photocatalysts are contained in said second fluorocarbon resin layer.

4. (Previously Presented): A photocatalyst sheet as set forth in claim 1, wherein the photooxidation ability of the surface of said fluorocarbon resin layer containing photocatalysts of said photocatalyst sheet is such that, when oleic glyceride is coated on said surface of fluorocarbon resin layer, and an ultraviolet light is irradiated onto said surface by $1\text{mW}/\text{cm}^2$, the rate of decomposition of said oleic glyceride is $0.1\text{mg}/\text{cm}^2$ day or more.

5. (Previously Presented): A photocatalyst sheet as set forth in claim 1, wherein the photoreduction ability of the surface of said fluorocarbon resin layer containing photocatalysts of said photocatalyst sheet is such that, when said photocatalyst sheet is soaked in the 0.1N (normal) silver nitrate aqueous solution, and ultraviolet light is irradiated for one minute onto the surface of said fluorocarbon resin layer containing photocatalysts by $1\text{mW}/\text{cm}^2$, the color difference change is $\Delta E^* > 1$.

6. (Previously Presented): A photocatalyst sheet as set forth in claim 1, wherein the contact angle of the surface of said fluorocarbon resin layer containing photocatalysts is about 90 degrees or more.

7. (Previously Presented): A photocatalyst sheet as set forth in claim 1, wherein the thickness of said fluorocarbon resin layer containing photocatalysts is $1\text{ }\mu\text{m}$ or more.

8. (Currently Amended): A photocatalyst sheet comprising:
a substrate;

a first fluorocarbon resin layer coated made of polytetrafluoroethylene (PTFE) on said substrate;

a second fluorocarbon resin layer made of copolymer of tetrafluoroethylene-hexafluoropropylene (FEP) or copolymer of tetrafluoroethylene-perfluoroalkylvinylether (PFA) coated on said first fluorocarbon resin layer; and

a third fluorocarbon resin layer consisting of copolymer of tetrafluoroethylene-hexafluoropropylene (FEP) containing photocatalysts at least of titanium oxide (TiO_2 [[,]] or TiO_3) coated on said second fluorocarbon resin layer;

said photocatalysts have the part exposed on said third fluorocarbon resin layer;

the ratio of said photocatalysts in said third fluorocarbon resin layer is 10 – 60 weight %;
and

said photocatalyst sheet can be thermally welded to said third fluorocarbon resin layer, and when said photocatalyst sheets are thermally welded to each other, and if [[said]] a welded part is peeled off at the rate of 20 mm/min, then ~~whole of said fluorocarbon resin layer~~ the first fluorocarbon resin layer, the second fluorocarbon resin layer and the third fluorocarbon resin layer as a whole layer is completely peeled off from said substrate.

9. (Currently Amended): A photocatalyst sheet comprising:

a substrate;

a first fluorocarbon resin layer made of polytetrafluoroethylene (PTFE) coated on said substrate;

a second fluorocarbon resin layer made of copolymer of tetrafluoroethylene-hexafluoropropylene (FEP) or copolymer of tetrafluoroethylene-perfluoroalkylvinylether (PFA) containing photocatalysts at least of titanium oxide (TiO_2 [[,]] or TiO_3) coated on said first fluorocarbon resin layer; and

a third fluorocarbon resin layer consisting of copolymer of tetrafluoroethylene-hexafluoropropylene (FEP) containing photocatalysts at least of titanium oxide (TiO_2 [[,]] or TiO_3) coated on said second fluorocarbon resin layer;

said photocatalysts have the part exposed on said third fluorocarbon resin layer;
the ratio of said photocatalysts in said third fluorocarbon resin layer is 10 – 60 weight %;
the surface of the fluorocarbon resin layer containing said photocatalysts of said photocatalyst sheet is water repellent upon ultraviolet light irradiation, and
said photocatalyst sheet can be thermally welded to said third fluorocarbon resin layer, and when said photocatalyst sheets are thermally welded to each other, and if ~~[[said]]~~ a welded part is peeled off at the rate of 20 mm/min, then ~~whole of said fluorocarbon resin layer~~ the first fluorocarbon resin layer, the second fluorocarbon resin layer and the third fluorocarbon resin layer as a whole layer is completely peeled off from said substrate.

10-19. (Cancelled).

20. (Previously Presented): A photocatalyst sheet as set forth in claim 8, wherein photocatalysts are contained in said second fluorocarbon resin layer.

21. (Previously Presented): A photocatalyst sheet as set forth in claim 8 or 9, wherein the photooxidation ability of the surface of said fluorocarbon resin layer containing the photocatalyst is such that, when oleic glyceride is coated on said surface of fluorocarbon resin layer, and an ultraviolet light is irradiated onto said surface by $1\text{mW}/\text{cm}^2$, the rate of decomposition of said oleic glyceride is $0.1\text{mg}/\text{cm}^2$ day or more.

22. (Previously Presented): A photocatalyst sheet as set forth in claim 8 or 9, wherein the photoreduction ability of the surface of said fluorocarbon resin layer containing the photocatalyst is such that, when said photocatalyst sheet is soaked in the 0.1N (normal) silver nitrate aqueous solution, and an ultraviolet light is irradiated for one minute onto the surface of said fluorocarbon resin layer containing the photocatalyst by $1\text{mW}/\text{cm}^2$, the color difference change is $\Delta E^* \geq 1$.

23. (Previously Presented): A photocatalyst sheet as set forth in claim 8 or 9, wherein the contact angle of the surface of said fluorocarbon resin layer containing the photocatalyst is about 90 degrees or more.

24. (Previously Presented): A photocatalyst sheet as set forth in claim 8 or 9, wherein the thickness of said fluorocarbon resin layer containing the photocatalyst is 1 μm or more.

25. (Withdrawn): A manufacturing method of a photocatalyst sheet, which comprises:

- a substrate made of glass fiber;
 - a first fluorocarbon resin layer made of PTFE coated on said substrate;
 - a second fluorocarbon resin layer made of either one of PTFE, FEP, or PFA coated on said first fluorocarbon resin layer; and
 - a third fluorocarbon resin layer made of FEP containing photocatalysts consisting at least of titanium oxide (TiO_2 , TiO_3) coated on said second fluorocarbon resin layer;
- of which said photocatalysts have the part exposed on said third fluorocarbon resin layer, the ratio of said photocatalysts in said third fluorocarbon resin layer is 10-60 weight %, and the surface of said fluorocarbon resin layer containing said photocatalysts of said photocatalyst sheet is water repellent upon ultraviolet light irradiation, and when said photocatalyst sheets are thermally welded to each other, and if said welded part is peeled off at the rate of 20 mm/min, then whole of said fluorocarbon resin layer is completely peeled off from said substrate, and
- said method being characterized to comprise
 - a process of coating the first fluorocarbon resin layer on the substrate;
 - a process of coating the second fluorocarbon resin layer on said first fluorocarbon resin layer; and
 - a process of coating the third fluorocarbon resin layer containing photocatalysts on said second fluorocarbon resin layer.

26. (Withdrawn): A manufacturing method of a photocatalyst sheet, which comprises:

a substrate made of glass fiber;
a first fluorocarbon resin layer made of PTFE coated on said substrate;
a second fluorocarbon resin layer made of either one of PTFE, FEP, or PFA containing photocatalysts coated on said first fluorocarbon resin layer; and
a third fluorocarbon resin layer made of FEP containing photocatalysts consisting at least of titanium oxide (TiO_2 , TiO_3) coated on said second fluorocarbon resin layer;
of which said photocatalysts have the part exposed on said third fluorocarbon resin layer, the ratio of said photocatalysts in said third fluorocarbon resin layer is 10-60 weight %, and the surface of said fluorocarbon resin layer containing said photocatalysts of said photocatalyst sheet is water repellent upon ultraviolet light irradiation, and when said photocatalyst sheets are thermally welded to each other, and if said welded part is peeled off at the rate of 20 mm/min, then whole of said fluorocarbon resin layer is completely peeled off from said substrate, and
said method being characterized to comprise
a process of coating the first fluorocarbon resin layer on the substrate;
a process of coating the second fluorocarbon resin layer containing photocatalysts on said first fluorocarbon resin layer; and
a process of coating the third fluorocarbon resin layer containing photocatalysts on said second fluorocarbon resin layer.

27-28. (Cancelled).

29. (Withdrawn): A manufacturing method of a photocatalyst sheet as set forth in claim 25 or 26, characterized in that coating processes are continuous for said first fluorocarbon resin layer, said second fluorocarbon resin layer, either containing or not containing the photocatalyst, and said third fluorocarbon resin layer containing the photocatalyst.

30. (New): A photocatalyst sheet as set forth in claim 1, characterized in that said photocatalysts are TiO_2 , and said second fluorocarbon resin layer is made of tetrafluoroethylene-hexafluoropropylene (FEP).

31. (New): A photocatalyst sheet as set forth in claim 8, characterized in that said photocatalysts are TiO_2 , and said second fluorocarbon resin layer is made of tetrafluoroethylene-hexafluoropropylene (FEP).

32. (New): A photocatalyst sheet as set forth in claim 9, characterized in that said photocatalysts are TiO_2 , and said second fluorocarbon resin layer is made of tetrafluoroethylene-hexafluoropropylene (FEP).